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ABSTRACT

This Records and Archives Management Programme (RAMP) study is intended to assist in the development of basic training programs and courses in document preservation and restoration, and to promote harmonization of such training both within the archival profession and within the broader information field. Based on the assumption that conservation planning and management are essentially common sense and intelligent use of the abundant information available in the voluminous literature on the subject, the study suggests one way of conducting a conservation survey of the library building and its contents to obtain the information necessary for starting a conservation program. It is noted that, although this study is primarily concerned with books and documents, the information presented applies equally to all other nonbook materials found in libraries and archives. Information provided in the report addresses: (1) the scope of the problem; (2) causes for the degradation of books and paper records; (3) the requirements for long-range conservation programs; (4) getting started in a conservation program; (5) determining the physical condition of the materials in the collection; (6) preparing a survey report; (7) evaluating the spaces in the building; and (8) recommendations for the treatment of materials. An annex contains useful forms for recording conservation survey data. (31 references) (CGD)

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Methods of evaluation to determine the preservation needs in libraries and archives: a RAMP study with guidelines

General Information Programme and UNISIST

United Nations Educational,
Scientific and Cultural Organization

Paris, 1988

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METHODS OF EVALUATION TO DETERMINE THE PRESERVATION NEEDS IN LIBRARIES AND ARCHIVES : A RAMP STUDY WITH GUIDELINES

prepared
by George M. Cunha

General Information Programme and UNISIST

United Nations, Educational,
Scientific and Cultural Organization

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PREFACE

In order to assist in meeting the needs of Member States, particularly developing countries, in the specialized areas of Archives Administration and Records Management, the Division of the General Information Programme has developed a long-term Records and Archives Management Programme - RAMP.

The basic elements of RAMP reflect and contribute to the overall themes of the General Information Programme. RAMP thus includes projects, studies and other activities intented to :

- develop standards, rules, methods and other normative tools for the processing and transfer of specialized information and the creation of compatible information systems ;

- enable developing countries to set up their own data bases and to have access to those now in existence throughout the world, so as to increase the exchange and flow of information through the application of modern technologies ;

- promote the development of specialized regional information networks ;

- contribute to the harmonious development of compatible international information services and systems ;

- set up national information systems and improve the various components of these systems ;

- formulate development policies and plans in this field ;

- train information specialists and users and develop the national and regional potential for education and training in the information sciences, library science and archives administration.

The present study is intended to assist in the development of basic training programmes and courses in document preservation and restoration, and to promote harmonization of such training both within the archival profession and within the broader information field.

Comments and suggestions regarding the study are welcomed and should be addressed to the Division of the General Information Programme, Unesco 7, Place de Fontenoy, 75700 Paris. Other Studies prepared under the RAMP programme may also be obtained at the same address.

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0. Introduction

Every library and archive must determine its own preservation needs from which to develop its own conservation program, because it is impossible for conditions in any two libraries or archives to ever be the same. In order to plan and develop a long range conservation program librarians and archivists must first have knowledge of the physical condition of the materials for which they are responsible. They must also have an understanding of the characteristics of the exterior and interior environments in which they work, and the effects of those environments on the collections, because it is often possible to make changes inside library and archives buildings to minimize or eliminate conditions that endanger the collections. The information necessary to start a conservation program can be obtained by doing a conservation survey of the building and its contents. This study suggests one way to do that.

The objective in preparing this RAMP Study was to demonstrate that there is nothing mysterious about conservation planning and management. It is essentially common sense and intelligent use of the abundant information available in the now voluminous literature on the subject. Some of that is listed in the recommendations for further reading at the end of the text.

This study is concerned primarily with books and documents but the information presented applies equally to all of the other non-book materials found in libraries and archives.

he survey procedure described in the following chapters and in the appendices was developed over a period of many years, first at the Library of the Boston Athenaeum, later at the North East Document Conservation Center in Andover, Massachusetts, and finally at the University of Kentucky's College of Library and Information Science. The method is useful

and practical because it does not require that the person using it have the expert knowledge and skills possessed by those with advanced education and training in conservation science.

It must be accepted that conservation is expensive. Anyone who thinks that is not so is naive. It is also a fact that conservation is a lot less expensive when some of it is done in-house by staff, with the aid of volunteers whenever possible. An example is the procedure described in this study, the first step in any conservation program, to determine what the preservation needs of an establishment are. This is one of the least expensive parts of a long range conservation program because the costs are only those for the time of the staff who collect and evaluate the data and the associated stenographic fees.

Because this procedure was developed over a period of years in the United States States there is mention of heating, ventilation, and air conditioning machinery and controls and security systems that may not yet be available in some other countries. That does not disqualify the procedure for use in those countries. The information is included in the text because it is important for all librarians and archivists to be informed in those matters in the development of the long range conservation objectives for their establishments.

The information in the literature listed in the bibliography confirms my experience first as Chief Conservator, Library of the Boston Athenaeum; later as Director, North East Document Conservation Center in Andover, Massachusetts; and now as Adjunct Professor of Conservation, College of Library and Information Science, University of Kentucky. I wish to acknowledge with particular thanks the generosity of Mr. William J. Welsh, The Deputy Librarian of Congress, who made available for my information in the preparation of this subject a copy of

an unpublished (in September 1987) Library of Congress discussion paper "Preservation Selection Decisions" by Ricky Erway, Office of Planning and Development.

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1. THE SCOPE OF THE PROBLEM

1.1 The General Condition of Library and Archives Collections

In most libraries and archives the general condition of books and paper records is not good because of hard use, chemical deterioration, inadequate storage, and the effect of the environments in which they are kept. Records deterioration has existed since people first began to systematically document the histories of their times on parchment, papyrus, leather, bone, clay and stone, and other materials thousands of years ago, long before paper was first used in China. The situation became acute in the 19th century when, in order to meet the ever increasing demand for paper, and capitalizing on the burgeoning technologies of the industrial revolution, papermaking and bookmaking were mechanized with major changes in the techniques and materials used for each. This, combined with the effects of air pollution, in heavily industrialized areas, on organic materials (paper, leather, fabrics), has resulted in a situation in which it can be conservatively estimated that 40 to 50% of the books in most libraries in the United States today are in need of physical care, and 20%, because of their brittle pages, are beyond the point where they can be used without seriously damaging them.

In 1982 it was observed - "It is not necessary to tell you about the general condition of books in libraries from the abuse they receive. It is sufficient to reiterate what Frazer Poole at the Library of Congress reported in 1973 that 'over one third of the books in that great institution are too brittle to use.' At that time Poole also predicted that 'most non-fiction published from 1900 to 1999 would be unusable by the year 2000.'

I think that his most significant observation at a later date was that if the Library of Congress kept only 10% of its six million brittle books (in 1973) and took care of them at the rate of 20,000 books a year it would take eighteen million dollars and thirty years to do the job" (9a). - Today the situation is different. Now, because of of the availability of mass deacidification and other technical developments, and because librarians and archivists are accepting conservation management as one of their everyday responsibilities (see references 8, 11, 15, 21, 22, 23, 24, 25, 30 and 31) Mr. Poole's gloomy predictions are no longer valid.

The attention now being given to preservation is ample evidence that librarians and archivists, at long last, agree that this vitally important aspect of collection management can be ignored only at great cost. Dr. Richard Smith's estimate of those costs (26) are mind boggling. According to his calculations, based on examination of the condition of identical volumes in Chicago's Newberry Library; Lawrence University Library in Appleton, Wisconsin; and the New York Public Library, books in libraries in America are deteriorating, because of acid hydrolysis and the other enemies of books, at a rate of 57% in fifteen years and 85% in twenty two years. In terms of dollars that means that the costs, because of deterioration, in America's research libraries, with their 300,000,000 books, was $1,440,000,000 in 1985. That is about four times the annual book budgets of those libraries for the same year. In other words, according to Smith, the value of American research library collections is moving backward. It can only be assumed that the situation is the same in libraries elsewhere in the world.

2. Causes for the Degradation of Books and Records

An understanding of why and how library and archival materials deteriorate will help curators and administrators understand the need for, and importance of, sometimes expensive line items for preservation in the annual budgets. The enemies of books and paper records, in addition to the fire and water damage usually associated with disasters, are heat and humidity, light and ultra-violet energy, insects, rodents, fungi, oxygen, acid and the people who use (and abuse) those records. Following are brief summaries of the great deal of information that has been published in regard to each of those problems.

2.1 Chemical agents of destruction.

2.1.1 Oxidation

Oxidized paper loses its strength and durability. Oxidation is a change (invariably for the worse) in organic and inorganic substances by their reaction with oxygen in the air we breathe. Other than by isolating books and other paper records from contact with air, as has been done for the Declaration of Independence, the Constitution, and the Bill of Rights in the United States National Archives in Washington, there is little that can be done about oxidation. There is a controllable chemical reaction, chelation, that has potential for reducing damage to materials by oxidation but means for its use for the preservation of books and paper records have not been fully explored.

2.1.2 Acid

Acid is the arch enemy of librarians because it is a direct cause for hydrolysis. Hydrolysis is "a chemical product of

decomposition involving splitting of a (cellulose) bond and addition of the elements of water" (Webster's Seventh New Collegiate Dictionary). As time goes by, acid contaminated paper loses its strength and becomes increasingly brown stained, and is eventually embrittled to the extent that it cannot be handled without crumbling.

The principle cause for acid stained and embrittled machine made paper is alum/rosin sizing which until recently was the only sizing used in the manufacture of that product. Alum (aluminum sulfate) reacts with the moisture that is always present in paper creating sulfuric acid (H_2SO_4). Hydrogen ions (H^+), from the sulfuric acid, then split the cellulose bonds damaging the fibers and ultimately destroying the paper.

Air polluted by carbon aerosols and other particulate matter, and by noxious gases from industrial chimneys and automobile exhausts, is another cause for the acid contamination of library and archival materials. Sulfur dioxide from industrial chimneys is absorbed by paper as water is absorbed by a blotter. It then reacts with the water always present in paper to form sulfurous acid which in turn becomes sulfuric acid which soon discolors and ultimately embrittles the paper to the point where it is useless. Nitrous and nitric oxides from automobile exhausts when absorbed by paper and leather become nitric acid which is almost as destructive as sulfuric acid. Water scrubbing devices in air conditioning systems are an effective means for removing noxious gases from urban air but it has been learned that the problem of keeping the water scrubbing devices operable is often more than an institutions budget can stand. Activated carbon filters in the air circulation system are an alternative. They remove gaseous contaminants and when used in conjunction with

glass wool filters to remove solid particulate matter from the recirculated and make-up air are a good combination.

In regard to hand made paper the acid problem is not as serious as it is for the machine made product because (a) the sizing used in it is either gelatin or starch, both of which are non-acid substances; (b) lignin (an organic acid) containing wood pulp is never used for hand made paper; and (c) alpha cellulose, which predominates in cotton and linen fibers in the the pulp used for European hand made paper, is resistant to acid contamination by air pollution. For that reason the preservation of pre-19th century books and documents, all of which were made with hand made rag paper, is less of a problem than for those made in the 19th and 20th centuries.

2.2 Biological agents

Insects and rodents thrive in places where housekeeping is indifferent, and, on too many occasions, have created havoc in collections - sometimes to the point of total loss of important information. Damage by vermin is needless, because today those pests can be relatively easily controlled.

Fungi, "parasitic lower plants that lack chlorophyll and include molds, mildews, rusts, and bacteria" (Webster's Dictionary), are omnipresent. Fungus spores require three things to survive and multiply - food, warmth and moisture. Cellulose in paper, and paper and cloth book covers; collagen in leather book covers; starch and gelatin sizing in paper; vegetable and animal glue in book bindings; and even wood shelves and cabinetry all nourish fungi. When the temperature is high (above 23^0C), and the relative humidity is above 65%, at the same time, fungi multiply

at a phenomenal rate. At first that is only a nuisance - mildew (mould) on exposed surfaces. Soon, however, the spores send roots (hyphae) down into the paper, cloth or leather fibers staining the material. The third stage is when the growing hyphae consume the fibers and disintegrate the material. Little can be done to eliminate the fungus spores always in the air around us. What can be done is to create environments in records storage areas in which mold and mildew cannot exist. That can be done by keeping the temperature below 23^{o}C and the relative humidity below 60%. Doing either will prevent mold growth but it is far preferable to do both at the same time.

Except for bibliophiles (and they are not always guiltless), people can usually be included amongst the enemies of books. Libraries have always been vulnerable to thieving and vandalism. In addition to normal wear and tear, which can only be eliminated by withdrawing books and paper records from use, patrons and even well meaning, but uninformed, staff are often the direct cause of much damage to books - while photocopying them for instance or while shelving and storing them. The answer to that is in more instruction and training.

2.3 Physical factors

High heat accelerates chemical reactions, such as oxidation and acid hydrolysis, and acerbates mould growth. Too little humidity dehydrates paper. High humidity is ideal for mold growth. In addition dimensional changes in paper and book materials, caused by constantly fluctuating temperature and humidity, over a long period of time seriously damage them. Nothing will give librarians and archivists a greater return for their investments in preservation than to stabilize the

environments in their storage areas by providing close, positive, 24 hour a day, year-round, temperature and humidity control with air filtration. The recommended conditions, a compromise between what is good for the books and paper records and what is comfortable for people, are temperatures between 19-21°C and relative humidity between 45-55%. Maintaining those temperatures is not too difficult in most libraries. Keeping the relative humidity between 45-55%, particularly in warm weather, is often difficult to achieve. The optimum temperatures for preservation of books and paper records are lower, in the 0 - 5 degree celcius range, but those temperatures are not realistic for libraries and archives. Books and paper records last longer at low temperatures for the same reasons that milk, butter and eggs do when they are refrigerated. It is important to know that the useful life in good condition of books and paper records, is doubled with every ten degrees celcius reduction in storage temperature.

Conflagrations, the ultimate in exposure to heat, reduce libraries and archives to ashes. Fire prevention should be included in all conservation programs because even minor fires can result in disastrous damage to collections.

Similarly means for the protection of books and records from water damage, whether it be because of great storms, ocean or river flooding, or by leaking roofs, wet basements, defective plumbing, and many other reasons, must be considered in any conservation program. Unwanted liquid water is disastrous for books and paper. In addition to its effect on inks and colors, in a very few hours it causes coated paper pages to permanently stick to each other. It also provides abundant moisture for massive fungus growth. All that in addition to the swelling and distortion of books and the disfigurement of unbound paper

records. Damage by unwanted water vapor is almost as bad - it just takes a little longer.

2.4 The effect of light

Sunlight, and the ultra-violet energy always associated with it, physically destroy organic materials and probably accelerate oxidation and acid hydrolysis. Fluorescent light, the characteristics of which are similar to light from the sun, damages paper as does sunlight - it too just takes a little longer. Incandescent light on the other hand is safe artificial lighting for books and paper paper because there is no ultra-violet energy associated with it.

2.5 Housekeeping problems

Slipshod housekeeping is often the indirect, and sometimes the direct, cause for costly damage. Dirt from any source soils and disfigures books and paper records. Accumulations of trash and debris attract rodents. Spilled food crumbs and sugary liquids attract insects. Snacks and beverages should be strictly forbidden, except in designated staff areas, which, in addition to having their daily cleanups, should be meticulously scrubbed and cleaned regularly and frequently. Those who believe that insects are not present in these spaces are deceiving themselves. It would be even better if food and drink were completely banned in libraries and archives.

2.6 Storage conditions

Improper storage is the direct cause for much unnecessary damage to library and archival materials. On the

other hand good storage will significantly extend their useful lives as well as keep them from harm.

The benefits of expensive air-conditioning systems and the most meticulous attention to housekeeping will be of little avail if the containers, shelving and cabinetry for library and archival materials are not of good quality and well designed. Containers should be made only of high quality acid-free paper and cardboard. File folders, document boxes, protective book boxes and wrappers, and portfolios for oversize materials that are made of inferior cardboard, or are lined with cheap ground wood or alum/rosin sized paper, contaminate the materials they are supposedly "protecting" because of the migration of acid from the container into the contents.

Sliding drawer vertical office files are excellent in places of business for convenient filing of correspondence, receipts, pay vouchers and other commercial records. They are not good storage for research library materials, or for archival materials and other records of permanent importance, that must be kept in good usable condition for a hundred years or more compared to an average of seven years for business paper. They are all too frequently used in libraries and archives because they are convenient, easy to obtain and compact. All unbound library and archival materials should be kept in acid-free folders in good quality boxes labeled so as to lay flat on the stack shelves. Flat storage of boxed materials eliminates the damage caused by the "slumping" of the single sheets when the boxes stand on end.

The disparity in the physical condition of large prints, maps, posters, broadsides, architectural drawings and

other large items in different collections is due as much to their storage conditions as it is to damage by unstable climate, light, and chemical contamination. Oversized records are safer, and last longer, when they are kept in flat map cabinet drawers, or in large, flat, covered boxes made of acid free materials. If at all possible, each item should be in its own acid-free folder which has been cut to the inside dimensions of the map drawer or box. When, because of space limitations or other reasons, it is not possible for each oversized item to be in its own folder and several have to be put together it is best to separate the individual items in the folders with acid-free tissue. When folders in a drawer or box are cut to various sizes for economy, or any other reason, the inevitable result is that the folders slide into each other (interleaving) damaging their contents. When drawers or boxes are full of folders of odd sizes there is also a tendency for them to pile up in one part of the drawer or box causing uneven distribution of weight on the materials at the bottoms of the containers.

Altogether too much physical damage is done to framed pictures that are piled haphazardly in closets or in boxes. Careless storage of those items often results in cracked or broken glass which can, and frequently does, damage the prints or pictures in the frames. Framed materials should be kept hanging on wire storage racks when they are not on exhibition. Otherwise they should be kept in storage bins with vertical dividers between them to protect the frames from damage by contact with each other.

3. The Essentials for Long Range Conservation Programs.

Conservation must be a continuum of actions by the entire staff every day of the year. It is a three-fold responsibility requiring (a) prevention of damage by controlling the environment, good housekeeping, improving storage and handling, and enhancing security (b) basic in-house treatment of bound and unbound records with simple repair requirements and (c) sophisticated professional care for seriously damaged materials. Of the three the first is by far the most important because it benefits collections as a whole and is the most cost effective. Prevention must be the basis of any conservation management program regardless of its scope or the size of the establishment.

3.1 Preventive Conservation.

Preventive conservation is many things. It includes providing housing for collections in accordance with their conservation needs as well as rapid accessibility; providing appropriate security; instructions for staff and users in regard to safe handling of materials; and periodic inspections of the collections so that the need for repair and restoration is promptly recognized. More and more librarians and archivists now accept the fact that it is far more sensible to invest in climate control, control of light, good housekeeping and storage, fire protection and security from theft and vandalism than to ignore those matters and pay far more in the future for the care of needlessly damaged records.

Preventive conservation is essentially common sense. Some preventive measures, such as close, positive, day-and-night,

year round, climate control, are costly. Some (good housekeeping and storage, control of light, fire prevention) are not. Costs for protection from theft and vandalism vary greatly depending on conditions in the establishment, but any institution's prevention efforts, great or small, must be based on a good understanding of the nature of library and archival materials; the effect of the surroundings on them; and the ability to recognize the treatment requirements as they develop.

Conservators can provide helpful information on the condition of selected items, or the condition of collections in their entirety, but conservation management requires more than that special technical expertise. A conservation program must reflect the legal, aesthetic, humanistic and historic ramifications in connection with records, and incorporate the librarian's or archivist's knowledge of the expected use (and for libraries the availability elsewhere) of the materials, and the advisability of converting the information from one format to another.

Eighty percent of the treatment required for damaged materials consists of minor repairs that often can and should be done in-house. If none of the library or archives staff, or the available volunteers, have the skills necessary for simple book and paper repair then that work will have to be done outside if such services are available. The responsibility of custodians is to know what can properly be done on the premises and what should never be done by anyone other than professional bookbinders and conservators.

The repair and restoration of damaged rare and valuable books, and extra important documents, maps, prints and

broadsides, should be done by professional bookbinders and conservators, because they only have the training and experience, scientific apparatus, tools and equipment necessary for that sophisticated work.

4. Getting Started.

In order to begin a preservation program in a library or an archive it is first necessary to have reliable information on the condition of the books and records in it. It is equally important to know when those books and records are found not to be in reasonably good repair why that is so. As mentioned in the first chapter there may have been several contributing factors when materials are damaged. What is required then is a systematic method for observing and recording the condition of collections and the environments in which they are kept. Only by doing that can a person get sufficient factual information on the situation in a particular establishment from which conclusions can be drawn and recommendations made for subsequent corrective action when that is necessary.

Other methods for conservation surveys have been used with good success at Stanford University (5), the Nebraska Historical Society (10), Yale University (29), the Library of Congress (28), and elsewhere in the United States and in Europe. The procedure described in this chapter was developed over a period of many years and is well suited for use by librarians and archivists who have had little conservation experience.

This is a method for assembling on previously prepared forms (see the annex) data that (a) can be used later to evaluate buildings, and the exterior and interior environments, as they

relate to the conservation needs of the collections; (b) provides information on the storage and handling procedures; and (c) describes the condition of the books and records in the stacks. From that data conclusions can be made in regard to the preservation needs of that particular institution. Then it will be possible to make recommendations, with a list of priorities, to meet those needs. Those recommendations will, of course, have to reflect other management considerations as well as the preservation requirements.

When using the forms, described and illustrated in the annex, for recording the prevailing conditions, careful observation and explicit notations (using the space on the backs of the forms if necessary) will be time well spent. The following are suggestions for the questions to ask, and matters to pursue, as the survey progresses.

4.1 Examining the building

4.2 The overall situation

4.2.1 The location

Is the institution on the seacoast or inland; on a flood plain or in a river bottom; in a tornado or hurricane area; in an earthquake zone; in an urban, suburban or rural area; near an industrial complex?

4.2.2 The regional climate

Is the weather seasonally hot and humid or cold and damp? Are you in a desert region or a rain forest? In a tropical, sub-tropical, or temperate zone?

4.3 The structure of the building

Architecture. Is the structure built of wood, metal, stone, brick or combinations of those materials? What is its general appearance and condition?

The roof. Is it flat or pitched. Is it made of slate; felt tar and gravel; copper or tin; wood or asphalt shingles? What is its age and condition? Does it leak? Is it insulated?

Is the foundation solid and dry? Are the windows and doors tight? Are the walls insulated? In cold climates are there double windows and doors to prevent heat loss in the wintertime?

Where are the lavatories, kitchens, and utility rooms in relation to the stacks?

4.3.1 The interior climate

Determining the interior climatatic conditions is best done by recording the temperature and humidity over a considerable period of time. The opinions of people who work in the building are also useful. It is important to know if it is possible to comfortably heat and cool the storage and exhibition rooms throughout the year; if the basement is damp; if the attic is hot and humid in the summer and cold and damp in the winter? Are some rooms hotter or colder than others?

4.3.2 The heating system

Is the building heated by oil, coal, wood, gas, or electricity? Is there a central heating system? Are there heat exchange units on the ceilings in the various spaces? If it is a central system is the heat distributed by hot water or steam to radiators or by forced air through ducts? What is the age and condition of the machinery? Is it well serviced and maintained? Is the heat turned down (or off), for economy, at night or on weekends and during holidays? How is the humidity controlled when the system is in operation?

4.3.3 Space cooling

Is there a central forced air cooling system with air ducts? Are there individual cooling units on the ceilings in various spaces? Are there window mounted air conditioners? If there is cooling by ceiling units, trace the routing for the piping for the cooling (or heating) water supplied to them. If it is a central system what is its age and what is the condition of the machinery? The condition of the ducting. The number and type of air filters- how often are they replaced? Is the system on all day, every day or is it used as needed for personal comfort?

4.3.4 Humidity control

In cold climates are there provisions for replacing air moisture loss (because of low humidity) in the air when the heating system is in operation? How is that humidification provided and controlled? In warm climates are there provisions for removing surplus moisture (high humidity) from the air in the

building? How is that dehumidification controlled? Is it possible to keep the humidity within acceptable limits from day to day, year round?

4.3.5 Building security

Are the windows barred? Are there crash bars on the exterior doors? Are there dead bolt locks on the doors? Who has control of the keys? Which staff members have keys?

Are there interior and/or exterior security patrols by uniformed watchmen? How often? Is there an alarm (called a "tattle-tale" in the United States) at the check-out desk that is activated when a person attempts to conceal a book when leaving the library through the checkout station.

Is there an intruder detection system? If so what type? When is it activated? Where and how is it monitored? Are there sensors on the doors and windows? If the sensing devices are in the interior of the building, where are they?

4.3.6 Fire protection

Is there a fire detection system? If so is it by heat or smoke sensing devices? Where are they? How and where are they monitored? How frequently is the system tested? Is there a fire alarm (bells, etc.) to alert the staff and patrons when there is a fire?

Is there an automatic fire suppression system? If so is it water sprinklers, foam, carbon dioxide, or halogens (Freons)? When was it last tested?

Are there portable fire extinguishers in the building? How many are there and where are they located? Are they the right type for suppressing wood and paper fires? Does the staff know how to use them?

Are there automatically operated fire doors? Where? Are they unobstructed? When were they last tested?

4.3.7 Staff resources

Lastly make some notations on form A in regard to the skills and experience in conservation that the staff may have acquired in their academic training, or by participation in conservation seminars and workshops. This will be useful later when evaluating the assembled data and determining what in-house conservation measures can be proposed for completion by staff or by student help and volunteers under staff supervision.

At the same time notations should be made, in the space provided on the form, in regard to any conservation facilities already in place. That could be anything from a worktable, with a few knives and scissors and a paste pot, in an obscure corner in the basement to a fully equipped and well stocked bookbindery.

4.4 Inspecting the spaces in the building. (Using Forms B1 and B2)

Separate data forms should be prepared for each room or space in the building from the attic to the basement - even the office spaces, janitors rooms, storage closets, staff rooms, and snack bars. It must be remembered that while the temperature, humidity, lighting, and methods of storage in the stacks and

exhibition rooms are the principle factors affecting the condition of the books and records on the shelves there, those materials are also affected to some extent by the conditions in the other spaces. A fire hazard in the furnace room imperils the entire building. Water vapor from constantly wet basements moves horizontally and vertically into every part of the building. Fire caused by overloaded electrical circuits in the offices (typewriters, duplicating machines, computers, electric coffee pots, etc.) could very rapidly move into the stacks. Massive movement of heat through the roof (in or out depending on the season) creates extremes of heat and cold in the attic spaces, which in turn affect the entire building. Rats and mice and other vermin, abundant in cluttered basement and attic storerooms, invariably find their way from there into the stacks and reading rooms. Cleaning fluids and other housekeeping supplies, kept in lockers and closets for the convenience of the maintenance staff, are potential sources of fire by spontaneous combustion. One must not assume that insects which often thrive and multiply in staff room kitchens and the snack bars will stay there.

Data for every space in the building should be recorded on separate B1 forms. The B2 form will be useful for recording in greater detail the conditions in the storage and exhibition areas, and in reading rooms and basement and attic spaces that might at some future date be utilized for collections storage.

4.5 The storage and exhibition rooms

4.5.1 Their contents

A brief description of the contents of each room is necessary because optimum storage conditions vary for different

categories of library and archival materials. The best humidity for books and paper is 45-55%. For photographic materials 35-45% is better. The generally accepted temperature for rooms containing a variety of materials in constant use is 19-21^{0}C. Considerably lower temperatures are best for seldom used materials.

4.5.2 How stored

How library and archival materials are packaged and shelved is of the utmost importance for their preservation. Are the books well supported standing on their tails? Are the large books laying flat on the shelves? Are the cans of rolled film kept standing on edge. Are the boxes of unbound paper records laying flat on the shelves? Are the oversize materials in file folders in map cabinets, or large flat boxes? If not, how are they protected?

The location in the building (ie on which level and on what side) is important because of the effect of the sun, and other outside conditions on the mini-climates inside. Proximity to the basement or attic is significant. Also important is the location relative to lavatory, kitchen or utility spaces. Being under any one of them is always hazardous for books and documents.

Temperature and humidity should be recorded, and averaged, over a period of several weeks, both in winter and summer. That data is easily accumulated in graphical form with recording hygrothermographs, when they are available. It can be done less conveniently, but no less accurately, by making daily observations with thermometers and inexpensive sling

psychrometers. This is the only way to determine the degree of temperature and humidity stability, or lack of it, which is so vitally important for the preservation of library and archival materials.

4.5.3 The Housekeeping.

Comments in regard to housekeeping are necessary because good housekeeping is so important for fire safety and pest control.

4.5.4 Their illumination

The number, size, and location of the windows in a room determines the amount of damaging light that reaches the books. Are curtains and blinds in place, and in use, to minimize damage by natural light? In spaces open to the public, which often regards curtains and drapes as a nuisance, ultra-violet (UV) filtering film on the windows is effective. Is there UV film on the windows in this room? The ideal situation is to have closed stacks with no windows or in which the windows have been permanently blocked with wood, brick or other building materials. Could that been done in this room?

Is the artificial lighting by incandescent bulbs or fluorescent tubes? Incandescent lamps are safe - fluorescent tubes radiate ultra-violet energy. If there is fluorescent lighting, are there UV filtering sleeves on the tubes to eliminate that source of damage?

4.5.5 Heating and cooling.

If the room is heated by steam or water radiators where are they located? If they are too close to the shelves they could be "cooking" the books. Are the radiators blocked by stacks or cabinets so that the room is not being uniformly heated?

If the room is heated and/or cooled by conditioned air from a central system, where are the inlet and outlet ducts? Are they blocked by shelves and cabinets so that the heating and cooling is affected or not uniformly distributed?

Is there auxiliary heating (electric heaters) or cooling (window mounted air conditioners) to help control the temperature?

4.5.6 Humidity control

How effective is the control of humidity in this room? If there is circulated air for heating and cooling, how is humidified in the winter and dehumidified in the summer? Is that sufficient to stabilize the humidity year round?

If the heating and cooling is by radiators and air conditioners are there portable humidifiers and dehumidifiers to help stabilize the humidity in that particular room?

4.5.7 Security.

Is the room open to the public? If so is there a staff monitor always in the room? Does that person have a good view of the entire room? If there is TV surveillance is it constantly monitored?

If there are collections of materials in cabinets and drawers are they kept locked.?

Are the windows barred? Are they sensitized? Is there an intruder alarm in the room?

4.5.8 Fire considerations.

Are there any accumulations of combustible materials (empty boxes, holiday decorations, unemptied waste baskets)? Do the housekeepers keep solvents and other cleaning materials in a locker or closet in this room? Is there a sprinkler system, or a standpipe with a firehose? Are there portable fire extinguishers? Does the staff know how to use them?

If there is an electric heater, or any other electrical equipment, is it "Underwriter Approved" and in good condition?

What is the age and condition of the electric wiring? When was it last inspected? Are any of the electric outlets in the walls overloaded with wires leading to copy machines, typewriters, coffee pots, etc.?

4.5.9 Water hazards

If there is a sprinkler system (or a standpipe with a fire hose attached) when was it last inspected?

Are there any stains on the ceiling and walls that suggest roof leaks, rain water penetration through the walls, leaking pipes, defective steam and hot water radiators? If so has the source been located? Has the problem been corrected?

Are there water pipes and drains of any kind (other than sprinkler pipes) running across the ceiling over the shelves and cabinets? What are they for? Are they in good condition? If they should burst or leak what would happen to the materials on the shelves? Can they be rerouted?

Other problems

Has there been any insect damage to the books and records? Is it recent? Are there dead insects on the shelves, in boxes, in cabinets? Can you find small piles of sawdust-like material on the shelves under the books? If so that could be bookworming. Opening randomly selected books will reveal shredded pages if termites are present, or tunnelling if there has been bookworming.

Is there evidence of rats (rats excrete black pellets) on the shelves, under stacks, behind cabinets? What about mice? Mice excreta looks like black rice. Mice sometimes nest in boxes of paper. Families of mice usually select a single place to urinate making large, ugly yellow stains on that surface.

Is there any mildew on the books or boxes? Are there any fungus stains on the pages, end sheets or covers of randomly selected books? Is that staining recent?

If there is a musty odor in the room that means dangerously high humidity which will lead to mould problems. Low humidity will cause vellum book covers to warp.

Are the spines of books fading? If so that means that sunlight with its ultra-violet radiation, or light from unshielded fluorescent tubes, has been reaching the stacks. Has that situation been corrected?

4.6 The furnace and/or machinery rooms.

Look into these spaces, that are usually in the basement if there is one, to get an idea of the type of equipment that is being used for heating and cooling the building. What are its designed capabilities? Its shortcomings? Its age and effectiveness? How well is it maintained and serviced? Here it is important to have the willing cooperation of the building superintendent or the maintenance chief. They will usually be more than glad to collaborate if they are made aware that by doing so it could help them get the system upgraded.

It is particularly important to look for fire hazards in furnace and machinery rooms. A greasy film on an oil furnace and the floor around it, and on nearby walls could, if ignited by accident, start a conflagration. Leaking fuel line connections on oil burning equipment are even more dangerous. Slipshod maintenance, careless housekeeping, and accumulations of debris of any sort in these rooms is foolhardy.

Exposed, and sometimes loose, electric wiring is dangerous, particularly if is old. Attachment of wires to circuit breaker panels and fuse boxes, on one end, and to control boxes on machinery and equipment, on the other, should be tight and clean.

4.7 Basement and attic storerooms.

Although they may now be used only as lumber rooms, these spaces have a potential for use as stack areas as a library grows. For that reason they should be inspected during the survey and notations made on B1 forms in regard to heating, cooling, and humidity control; natural and artificial lighting; security; fire safety; water risks; and pest control. It might even become obvious that it would be advantageous now to convert a storeroom to a stack area and rearrange the shelving of the collections accordingly.

In basement areas moisture control is extremely important. Are the walls and floor waterproof? Is the ceiling laced with plumbing pipes and drains? Where does the water main supplying the building enter the building? Can it be turned off quickly and easily in the event of a burst pipe in the building? Are there drains in the floor, and/or sumps and sump pumps for the removal of unwanted water ? What is the height of the water table, in the adjoining land, relative to the basement floor? Has the basement ever been flooded? If so what was the cause for that and what is the probability of a recurrence?

In attic areas the important consideration is how well those spaces are isolated from the weather outside. Does the roof leak? Is it sturdy? When was it last recovered? If the roof is flat is it well drained? Are the drains cleared regularly? What information is there on accumulations of snow?

Is the attic ceiling heavily insulated to prevent heat loss in the winter and high solar heating in the summer? Does the building's heating, ventilation, and air conditioning (HVAC)

system include the attic? If not is it feasible to make it so? What are the natural lighting arrangements - windows, skylights, etc.? What are the potentials for security? Except for occasional building leaks, and sometimes a tank for emergency water supply, there should be few water hazards in the attic. Plumbing pipes and drains will probably all be below the floor,

4.8 Administrative spaces.

These rooms should be checked primarily for fire hazards and evidence of insects and rodents. Staff kitchens and lavatories, particularly those that are located over storage and exhibition areas on the floors below, should be carefully examined to identify water hazards.

4.9 Utility rooms and closets.

Each of these spaces, regardless of where it is in the building, should be checked for fire hazards (accumulations of trash, volatile solvents and undisposed cleaning materials), and evidence of insects, rodents, and illicit smoking. There is also the possibility of water hazards (utility sinks, toilets, etc) that threaten books and records in storage and exhibition areas on lower floors.

5. Determining the physical condition of the materials in the collections. (Using the C Forms)

Becoming familiar with the physical characteristics of a library or archives building and being knowledgeable about the exterior and interior environments is necessary when planning for preventive conservation in order to reduce or eliminate conditions that have a negative affect on the collections in that building. In this survey procedure that information will have been accumulated the A and B data forms.

The rest of the survey consists of assembling information (on the C data forms) in regard to the physical condition of the books and records on the shelves, in order to determine their treatment needs. Some types of damage, and the required corrective treatment, will be obvious. Recognition of other types of damage is more difficult. The following are suggestions for guidance when examining different categories of materials as well as individual items. Careful observation and notation during this stage of the process will provide data from which meaningful conclusions and recommendations can later be made.

The C1 and C3 forms should be used for describing the condition of various categories of materials (reference, geneology, children's books, 19th century fiction, books by local authors, boxed documents, etc.,etc.). Form C2 will be most useful for determining the condition of individual items of sufficient importance to warrant that attention. They might include most, if not all, pre-1800 volumes; first editions of prominent authors; rare and valuable books of any period; holographs; etc.

Except for items that are of particular importance because of their rarity, intellectual content, association value, etc. it is obviously impossible to look at every book in a library collection, or every document in an archive. However, experience is a good teacher. With practice and a method for random selection one can assemble much useful information about the general condition of any category of materials. Judith Fortson-Jones, at the Nebraska Historical Society (10) got good results by looking at and recording the condition of every tenth item in the manuscripts and records there. See also Nainis (19), Library of Congress (28), and Walker (29) for information on random selection procedures used at other establishments.

5.1 Appearance

The overall appearance of each collection or category of materials is useful information. If materials that have been on the shelves for years are still clean and crisp, with intact covers that suggests (a) that they are made of good quality, acid resistant, materials, and (b) they have been well cared for over the years. Of course it is possible that materials made with inferior materials and poor workmanship, that have been little used, could still "look good" on the shelves, but upon closer inspection it will be found that the bindings are fragile and the paper stained and even brittle because of acid hydrolysis, oxidation, etc.

5.2 Wear and tear

Shelved books with worn, torn, soiled, stained and delapidated covers should be examined for evidence of chemical

and biological damage as well as the physical abuse that they obviously have had.

5.3 Soil and surface dirt

Soil on books and documents will range from loosely adhering dust and dirt to grime that is deeply embedded in the paper fibers. The former can often be easily removed by dusting and erasing - that is seldom possible with the latter. Notations should be made on the data form as to whether the soil is erasable dirt or grime, and whether the soiling is occasional or widespread on the items in that category.

5.4 Stains

Stains are another matter because (a) they are always unsightly, (b) they sometimes obliterate information, and (c) they are often evidence of chemical (acid), photochemical (effect of light), or biological (fungus) damage. Other stains may be only water soluble color transported into the paper when it has been wet for one reason or another. Still others could have been caused by solvents reacting with ink, particularly offset printing inks which are so often used in book making today and many writing inks. Stain identification is not easy but careful notation of the extent of staining on individual items and categories of materials is important. In the vast majority of cases stain reduction, if and when it is later decided to do that, should only be done by professional conservators.

5.5 Acid damage

Early recognition of acid damage is of the utmost importance. Acid contaminated books and documents are doomed unless something is done to neutralize the acid in them. Paper chemists and conservators use laboratory instruments for the precise measurement of the degree of acidity (or alkalinity) in paper. In a library or archive slight acid contamination is undetectable visually, but the degree of acid contamination (the pH), in not yet discolored book and document paper, can be approximately determined by testing with pH test paper strips sold by library supply houses. Archivists pens, also available from library supply houses, are useful for determining if paper is acid (or alkaline) but they will not provide any evidence of the degree of acid contamination (i.e. slightly, moderately or highly acid). Testing for acid in paper should be standard practice when examining special collections (see Cunha 9b).

The first visible evidence of acid hydrolysis in books and documents is a slight discoloration of the paper. The discol ration becomes greater as time goes on, and the acid content increases, until the paper becomes deeply and uniformly "brown stained" and is on the verge of embrittlement. Identification and flagging of brown stained paper is important because if that is done soon enough the material can be saved from embrittlement by deacidifying it.

The ultimate in acid contamination is when the brown stained paper becomes brittle to the point where it crumbles when being handled and is useless for research or circulation. The usual recourse when that happens is to transfer to another format, usually microfilm, to save the printed or written

information. The alternative, when the material has to be retained in its original format, is treatment by professionals who can deacidify, mend, and reinforce the fragile sheets, making them usable again.

5.6 Oxidation

Recent laboratory studies suggest that damage to paper by oxidation could be could be a more serious problem than contamination by acid. Regardless, from the librarian and archivists points of view, the difference between oxidation and acid damage in paper is indistinguishable. The early effects of oxidation are visually undetectable, but the extent of oxidation damage, even in its early stages, can be determined in a laboratory with instruments for measuring the loss of strength of paper (tear, fold, and burst strength) and changes in its color and tone.

5.7 Biological damage

5.7.1 Mould and mildew

The first evidence of fungus attack on materials is mildew on their surfaces. In the beginning it is only a nuisance that can be brushed or vacuumed away but it is important because the mildew (fungus spores) is evidence that the temperature and humidity in the area may not be satisfactory for records storage.

The second stage of fungus damage is the staining of paper by the growth of the fungus down into the material on which the spores have come to rest. The evidence of that is brown, blue, green or violet spots (they can also be the other colors)

of various shapes and sizes, rather than the uniform brown staining of the entire sheet that is caused by acid. Fungus staining is a serious situation that calls for sterilization of the materials and the surrounding area. After sterilization, if it is important to remove the stains, that can only be done by professionals.

The last stage of fungus damage is when the stained and damaged paper becomes soft to the point where it falls apart even with careful handling. Fungus "pulped" paper is soft - paper destroyed by acid is brittle and breaks into many pieces.

5.7.2 Insect damage

After a little experience, various types of insect damage, all too common in libraries, are easily recognized. Cockroaches eat through the cloth and paper spines and board coverings on books to get at, and devour, the animal and vegetable glue underneath. Silverfish and firebrats are more delicate and eat only the surface of paper. Termites, once they penetrate a book, turn the text block paper into shreds. The larvae of the many varieties of bookworms (carpet beetles, larder beetles, powder post beetles, etc.) tunnel their way through books destroying the text in the process.

5.7.3 Rodents.

Libraries and archives are havens for rats and mice, and even squirrels and other gnawing animals. When they become hungry enough, rats devour leather and frequently paper. Large, black pellets of feces, about the size of raisins, on the floor, and on the shelves behind the books, are unmistakable proof that

rats are in the building. Other evidence of the presence of rats (which once seen will never be forgotten) is prominent teeth marks on the chewed edges of book covers and paper.

Mice, because of their small size, do less damage than rats and squirrels. They like boxes of paper for nesting places. Evidence of their presence is smaller feces pellets, like black grains of rice. Another telltale is urine stains, in places which they select and use regularly for that purpose.

5.8 Damage by light

Photo-oxidation, which takes place when paper and textiles and other organic materials are exposed to sunlight and fluorescent lighting, is slow deterioration. At first it is not too serious (fading ink on displayed documents; color changes on pictures, posters and maps; faded spines on shelved books) but it is a warning that the lighting in the area is not good from the point of view of conservation. Continuous exposure to that unsatisfactory lighting will, over an extended period of time, result in the loss of crucial information on documents, the complete loss of some colors on maps and pictures, and the splitting of book cover joints, and the eventual separation of the backs of books from the rest of the covers.

5.9 Water damage

Books and documents damaged by flooding can sometimes be salvaged on the scene immediately after the accident. Or they can be frozen and kept in cold storage until the can be freeze dried weeks or months later. Those are disaster recovery operations that are a thing apart from the subject for this

study. On the other hand, it is not unusual for water stained books; books, now dry, but swollen and distorted by water damage sometime in the past; or documents and other paper records with water smudged ink and colors; to be discovered during a conservation survey. That damage could have been caused by recent, or earlier, roof leaks, faulty plumbing, defective steam lines, or clogged drains. If that is so the source of the unwanted water must be located and repaired as soon as possible, if that has not already been done. The condition of each item so damaged should be described on a separate Data Form C3.

6 Preparing a Survey Report

The observations made and the subsequent conclusions and recommendations in regard to a library or archives conservation needs will be most useful if they are presented as a written "survey report" to the director and trustees of the establishment for final decisions. Following are suggestions for one way to do that.

6.1 Analysis of the Collected Data and Determination of the Preservation Needs

Up until this point in the survey, an examination of the building and its contents has been completed. Information in regard to the effect on the collections of the location and environment, interior climate control, lighting, housekeeping and storage, security, and fire protection has been assembled on Survey Forms A and B. More information in regard to the physical condition of the material in the stacks is recorded on Survey Forms C. The next step is to analyze that data and make some conclusions in regard to the preservation needs of the establishment. That will include (a) opinions in regard to the overall suitability of the building for the safekeeping of books and documents, and identification of its inadequacies, (b) a description of the general condition of the various categories of materials on the shelves, and (c) a summary of the individual items (or categories of materials) that are in need of treatment. Then, after taking into consideration the resources available (staff skills, money, and commercial and professional services), make recommendations for necessary improvements to the building, housekeeping and storage, climate control, lighting, security,

and fire protection. The recommendations should also include proposals, with suggested priorities, for in-house and professional treatment of books and records needing repair and restoration. Good guidance in that respect is available in Atkinson (2) and Buchanan (4).

This is also an appropriate time to make decisions, from the viewpoint of overall economy as well as collection development requirements, in regard to which materials should be retained in the collections and which can be discarded. See Atkinson (2), Bansa (3), Child (7), and McCrady (14).

6.2 The building.

6.2.1 Its location

Although the geographic location of a library or archive plays a large part in the fate of the books and documents in it, little can be done about the location other than to be knowledgeable about how the regional and local conditions affect the climate inside throughout the year. High rainfall areas require extra flood precautions. Drought conditions increase the fire hazards. Buildings in hurricane and tornado prone areas require extra emphasis on structural maintenance.

An important consideration in regard to the location of a library or archive is whether it is subject to flooding by a river overflowing its banks or great coastal storms. If that is a possibility then the frequency of flooding in the past, and the greatest height reached by the flood water must be known. Only then will it be possible to make recommendations, if that is considered necessary, for redesigning the storage arrangements in

order to have the most important (if not all of the) collections permanently shelved above the high water mark.

6.2.2 The structure

If during the examination of the building it was revealed that the roof leaks, the exterior walls need repair, the windows and doors are not watertight, the basement is wet, or the drains are repeatedly clogged, all of which are potential threats to the safety of the collections, that information should be included in the report with suggested remedial action and the estimated costs. Input from the building maintenance staff is necessary in regard to work required. Cost estimates can be obtained from commercial contractors.

6.2.3 The climate inside

Some of the comments in the following paragraphs on climate refer to high technologies that may not be available in some countries. However it is important for all librarians and archivists to be informed in those aspects of conservation management and use them as guidance in planning their long range objectives.

The degree of control of the climate in buildings depends on the machinery installed for that purpose and how it is used. Control may range from none, in buildings in which there are no provisions whatsoever for heating and cooling, to excellent in places in which there are elaborate systems for heating, ventilation and air conditioning (HVAC). Regardless of what machinery and equipment is available, often there is much that can be done to improve the climate in a building, even

though it may not be possible to maintain the close, positive, day and night, year round, control of the temperature (at 19 - 21°C) and humidity (at 45 - 55% RH) that is so necessary for the preservation of books and paper records.

6.2.4 Heating and cooling.

In this section the survey report should include a brief description of the machinery and equipment in the building for heating and cooling the spaces. Comment should also be made in regard to (a) the age and condition of that equipment, (b) if it is being properly serviced, and (c) whether the equipment is being used effectively for book and records care as well as for the comfort of individuals. Turning the equipment off when the building is unoccupied is false economy. The cost, over the years, for the repair of books and records damaged by constantly fluctuating temperature and humidity, caused by that misguided economy effort, will far exceed the costs of the energy saved. If there is a HVAC system in place, and the equipment is not in operation day and night, throughout the year, the first recommendation in this section of the report should be to change that situation.

Practically all library and archives buildings in temperate zones are heated, but all too often they are not cooled during the summer months. When there are no provisions for cooling it should be recommended. The ideal situation is when the cooling machinery is part of a central HVAC system. When there is only a circulating hot air heating system, cooling can be "added on" by putting cooling machinery on-line in the existing duct work. When the heating is by steam (or hot water) radiators and there is no ducting, centralized cooling can be provided by the

installation of duct work, throughout the building, with the associated chillers, condensers and fans. If a network of ducting is not feasible, cooling can be done by (a) putting "heat exchange units" on the ceilings of the stack areas, with water piping connecting them to chillers and compressors in a central location, or by (b) using self contained cooling units (window mounted air conditioners) in the various spaces. Maintenance staff input is absolutely necessary here in selecting alternatives prior to getting cost estimates from contractors.

If the heating and cooling is by forced air circulation, comment on the effectiveness of the provisions for air filtration. Are the interior spaces reasonably free of accumulations of dust and surface dirt? What kind of filters are in use (solid particle removal, noxious gases, or both)? How frequently are the filters changed? If they should be changed more frequently, say so. If the building is in an industrial city with a high pollution factor, and there are no provisions for the removal of noxious gases, should the system be upgraded to include activated carbon filters for that purpose?

6.2.5 Humidity control.

Close, positive humidity control is particularly important for research libraries and special collections. Very few HVAC systems designed for year-round heating and cooling provide satisfactory moisture control - the capability for close, positive control of the relative humidity at 45-55% day and night year round. That is because it is expensive to install, troublesome to service and keep in operation, and very costly to operate during the summer months. Steam and hot water radiator heating systems have no provisions at all for humidity control

other than by the use of portable humidifiers in various spaces in the building.

One must accept the fact with HVAC systems it will always be difficult to maintain close positive control of relative humidity during the summertime and the Spring and Fall transition periods. Good humidity control during the heating season is less difficult. When it fails in the wintertime it is usually because the nozzles for the water (or steam) jets that spray moisture into the circulating air are clogged, or the jets may even have been inactivated. In either case it is a simple matter to clean or reactivate them and that should be a recommendation.

In buildings where there are no automatic provisions for close, positive humidity control, self contained portable humidifiers and dehumidifiers in selected areas (stacks, exhibition rooms, etc.) work quite well. The need for one or the other will be obvious from the climate data collected earlier in the survey (see page 18). The portable units are not expensive, there are no installation costs, and the operating costs are insignificant.

6.2.6 Security and fire protection

Provisions for security from theft and vandalism must be considered in determining preservation needs. A conservation survey report should include a description of the intruder alarm system (if there is one), its effectiveness and any shortcomings, and how and where it is monitored. If the existing security is not considered to be appropriate for the establishment that should be mentioned, with suggestions for upgrading it. Municipal

police are usually cooperative in this matter and vendors will welcome opportunities to demonstrate their systems.

Lack of, or inadequate, provisions for fire detection and suppression are certainly preservation needs. The report, therefore should include a description, with emphasis on its shortcoming, of the fire detection system (if there is one); the number, type and location of the sensing devices; their effectiveness, how and where they are monitored; the type of extinguisher (water, carbon dioxide, foam, Freon, etc.), if the system is automatic; the number and location of portable fire extinguishers, and whether or not the staff knows how to use them. Advice and guidance from the local fire authorities will be most helpful here in identifying deficiencies. Vendors can provide cost estimates for correcting them.

6.2.7 General Comments

At this point in the survey report it would be appropriate to list the in-house conservation resources. They would include the staff's conservation skills and experience based on courses of instruction at the academic level, participation in seminars and workshops, and practical experience in the field. Another resource would be an in-place conservation facility which could be anything from a worktable, with a few tools and some paper and a paste pot, in a corner of the technical services area, to a complete bookbindery. When there is no facility at all, the report should emphasize the need for at least a modest workspace, with a table or bench, and some tools and equipment.See Milevski (16) and (17), and Morrow (18).

7 The spaces in the building.

The conditions affecting books and documents, in the rooms and spaces on the different floor levels, in large libraries and archives can vary considerably. For that reason the report must contain comments, from the data on the B forms, about each space in which the institution's collections are exhibited or stored for convenient retrieval. Other rooms and spaces (furnace and machinery rooms, office spaces, staff rooms and kitchen facilities, toilet areas, etc.) are all potential sources of trouble for books and records in the stack areas and conditions in them should be mentioned in this part of the report. The following suggestions are offered for consideration in regard to each type of room.

Comment here should be in regard to the general suitability (climate control, lighting, housekeeping, etc.) of each space for the storage of books and records, with specific remarks on security, fire protection, and water risks that might apply to that space in particular.

7.1 Housekeeping

If the housekeeping arrangements are not sufficient to keep the room free of dust and dirt, accumulations of flammable debris; or insect attracting, sugar and food crumbs under vending machines and in places that the staff uses for coffee breaks and snacking; the required recommendations are obvious.

7.2 Illumination

If a room, particularly one on a sunny side of a

building, has large windows exposing the materials to much sunlight, and there are no provisions (curtains and blinds, tinted glass, etc.) for controlling the exposure, there should be a recommendation proposing how to do that. If there are curtains, blinds or shades, but they are not being used, there should be a recommendation that a directive from top level management is required to see that it is done.

If there is too much artificial lighting, recommend that some of the lighting fixtures be disconnected. If the lighting is by fluorescent tubes, and the tubes are not covered with ultra-violet filtering sleeves, recommend that UV filtering sleeves be purchased for installation by the maintenance staff.

7.3 Temperature control

After describing the provisions for heating the space (circulating air, steam or hot water radiators, electric heaters, heat exchange units), and their effectiveness, suggest how obvious deficiencies can be remedied. This will require cooperation and input from the building maintenance staff.

Similarly describe the adequacy of the provisions for cooling the space, if that is required during the summer months. When cooling is required, and none is provided, suggest alternative solutions such as window air conditioning units if a central system is out of the question.

7.4 Humidity control

Monitoring the relative humidity, even if only for a few days, will almost always reveal that the humidity is not

stable. More attention to the machinery by the maintenance staff will usually result in reasonably acceptable conditions in the winter months, but not in the summertime. During the transition from heating to cooling and vice/versa in the spring and fall humidity control is particularly difficult. That will always be a troublesome problem unless the building has the latest state of the art HVAC machinery, and the administration is willing to accept the cost of running it continuously, which is seldom the case.

One solution for this problem would be to recommend that one room be designated as a repository for the establishment's most important books and records, and that a small, efficient, self contained, HVAC unit be purchased for it. A less expensive recommendation would be to purchase portable humidifiers and dehumidifiers for use in the stack areas.

7.5 Security in the individual spaces

If, during the survey of the building, it was possible to get the cooperation of the municipal police for a security assessment, they will probably have already provided suggestions for upgrading the provisions for forestalling theft and vandalism. If not, the librarian or archivist doing the survey can assume that he is a thief or vandal bent on mischief and plan a way to accomplish that evil by circumventing the alarms to gain entry at night; concealing a theft from the staff on duty during working hours; or escaping detection after an act of vandalism. Imaginative thinking along those lines could reveal security discrepancies from which recommendations can be made for improving the system.

7.5.1 Fire hazards

Fire protection should also be assessed in determining preservation needs. If the local fire authorities have previously been recruited for a fire safety inspection, they have probably already identified potential hazards; provided a statement as to the building's vulnerability to fire; and evaluated the effectiveness of the available fire detection and suppression equipment. Recommendations for upgrading fire safety will then be obvious. When getting cost estimates from vendors for the required detection and suppression equipment, they should be asked to submit proposals for several options of varying effectiveness.

In addition to guidance and assistance from professionals, there is much that can can be done to identify fire hazards in the various rooms that can be easily eliminated. Examples are (a) too many electric cords, for coffee pots, typewriters and other office equipment, plugged into a single wall outlet - disconnect some of them; (b) aged and worn power cords on electrical equipment - replace them; (c) paper boxes and other flammable material in the vicinity of electric space heaters - take them away; (d) storage of flammable solvents, usually by the cleaning staff, in cupboards and closets - provide outside storage. The list is endless.

7.6 Water risks.

The frequency of serious and costly water damage to books and records by accidents within libraries and archives is many times greater than the frequency of damage by water from rivers overflowing their banks, or by hurricane on coastal areas,

or great inland storms. All to often hundreds, if not thousands, of gallons of water find their way to books and boxed documents in the stacks, from faulty plumbing, defective water and steam heating pipes, sprinkler system malfunctions, and roof leaks elsewhere. When there is visible evidence (stains on the walls, ceilings, and floors) of unwanted water sometime in the past, it probably will happen again at the same place. The remedy for that is to recommend regular, and frequent, inspections of the building, and the mechanical systems in it, by carpenters, roofers, plumbers, heating engineers, etc. to identify vulnerable situations as they develop.

7.7 Insect and rodent control

If insects in the building have not already infested the collections in the stacks they eventually will if they are not kept under control. Insect and rodent populations can be wiped out by professional exterminators. After that the probability of reinfestation can be minimized by good housekeeping and the promulgation, and strict enforcement of, explicit regulations in regard to the use of food and beverages in the building. Ideally that should be a simple statement prohibiting the consumption of food and beverages anywhere in the building. If that is not acceptable the recommendation should be to limit food and beverage consumption to specific areas well away from the stacks. Such regulations will not be popular and to be effective they must be issued by a top level administrator or the directives will be exercises in futility.

7.8 Control of mould growth

Mould and mildew on books and document boxes, and

other surfaces, is a warning that cannot be ignored - a warning that, in that part of the building at least, it has been overly warm and humid (both at the same time) for a considerable period of time. In hot humid climates, where the conditions inside are always seeking equilibrium with those outside the building, a malfunctioning central HVAC system will result in mildewing in a very short time. To reduce the probability of that recommend more frequent servicing of the HVAC machinery to minimize down time. In those places where the climate is cooler and drier, the source of the moisture, that has started the fungus growth, could be a leaking pipe, a clogged drain, or damp walls. Wherever it is, it must be located and eliminated. Otherwise the problrm will soon get worse.

The use of a portable dehumidifier, even in a large room, will usually reduce, and keep, the relative humidity in that space to below the critical value (65%) for mould growth. Those small machines are particularly useful when the weather is only occasionally hot and humid. They are also a boon, when an area has accidently become saturated with moisture, to keep the humidity within acceptable limits until the moisture problem has been corrected. Then there must be a thorough house cleaning to remove the accumulated mould growths and sterilize the area. Mildew (a light infestation of mould spores) in the temperate zones is mostly a nuisance, often of short duration, that is easily removed with vacuum cleaners or by wiping the mildewed surfaces with a cloth dampened with alcohol. However the presence of mildew is a warning that there may be a climate control problem in that area. Mildew in the tropics is a much more serious matter that requires high priority attention. Otherwise there will surely be more widespread mould growth, soon followed by serious staining and disfigurement of books and documents, and

ultimately paper pulping and deterioration such as that described in section 5.7.1 above.

7.9 Control of light to minimize photochemical effect

Widespread fading of the spines on books in the stacks is a warning of unsafe lighting that will some day result in extensive and costly damage to those books. Here the solutions are relatively simple. If there is fluorescent lighting, recommend the use of ultra-violet filtering sleeves on the tubes. If the artificial lighting is by photochemically safe incandescent bulbs, then the fading is caused by the sunlight coming through the windows or skylights. That too can be easily remedied by recommending one of these corrective measures in this priority - (a) blocking the windows with wood or by masoning; (b) painting the glass; (c) the use of reflective plastic film on the glass; (d) the use of roller shades, venetian blinds, or curtains and drapes on the inside windows.

8 Recommendations for the treatment needed by books and documents.

The treatment needed by individual items, or by the various categories of materials in general, will range from cleaning and simple repairs, that can be done in-house by staff and volunteers, to sophisticated repair and restoration of books and documents than can only be done by professional bookbinders and conservators. In the beginning, until some experience is acquired, it is best to have professional assistance in deciding what items can be treated in-house and what should be sent out for professional care. However, it will soon be learned that eighty percent of the conservation treatment, other than

commercial binding, required by the collections can and should be done in-house. That eighty percent would not include hand bookbinding or binding restoration; sophisticated repair of precious documents; the salvage of badly damaged parchment or vellum; or the repair and restoration of hand colored maps, water color paintings, colored prints and drawings, and other works of art on paper. That work should only be done by skilled professionals.

The materials that can be treated in-house include moderately damaged case-bound books; soiled and slightly damaged printed and written documents; some uncolored maps; soiled photographic material; soiled and moderately damaged uncolored prints and lithographs. The appropriate in-house treatments for those materials include simple repairs on book pages and covers; removal of pressure sensitive tape; erasing surface soil, spray deacidification, simple mending, and encapsulation of single sheet items; making protective wrappers and book boxes; and cleaning and repackaging photographic materials.

Workshops can be extremely simple or elaborate, depending on the funds and space available. The in-house work can be done by library staff, or students and volunteers working under the direction of a staff person. The principle requirements for in-house treatment (more than work space, tools and equipment, and people to do the work) is (a) an understanding of what can and should be done in-house and (b) rigid discipline to insure that those doing the work adhere to the instructions and guidance prepared for them. See Cunha (9a).

The following are suggestions for making treatment decisions based on the accumulated information on the C forms. Confidence comes with practice.

8.1 Soiled and stained books and documents

Collections of books and paper records that are defiled only by erasable dirt can be cleaned easily on the premises. It is a time consuming job but well worth the effort. The survey report should identify the items that need that attention and recommend that the work be done in-house.

The removal of grime involves washing, and the use of solvents and bleaches to remove the embedded soil. That is work for professionals, if the book or document is of sufficient importance to warrant the cost, and that should be recommended after obtaining cost estimates.

The removal of stains from documents and book pages also requires the skill and experience of professionals who, can identify the stains and reduce them by washing, by the use of solvents, or by bleaching as the circumstances dictate. That is not inexpensive, but it should be reommended if the stains are obliterating the text. Because it is so easy to expunge important information by the treatments, bleaching and the use of solvents for stain removal must never be attempted by anyone who has not been trained in those conservation procedures.

8.2 Worn and torn books and documents

If the overall condition (as noted on the C1 forms) of

any category of books in the general collections is minor wear and tear, it is often possible to repair them in house. The workspace required is minimal, and the supplies, tools and equipment needed are few. Excellent guidance for implementing a book repair program is in Milevski (16) and (17) and Morrow (18). That should be the recommendation together with a list of treatment priorities.

Unless a library has its own bookbindery, commercial rebinding is the general recourse for moderately damaged books in the general collections. Reputable commercial bookbinders can, for a reasonable price, repair books with loose sewing, worn and torn covers, missing end papers, etc. and return them to a strong and durable condition. An in-house bindery, if there was one, could also do it but would not able to handle the same volume of work as a highly mechanized commercial establishment. It is the responsibility of librarians, when contracting for commercial binding, to ensure that the work will meet conservation binding standards in regard to the quality of the materials used and the techniques of workmanship. Recommendations for commercial binding approval should so stipulate.

The first consideration in the decision making in regard to heavily damaged books (disintegrating paper, missing and mutilated pages) in the general collections is whether the books are available in reprint, or on microform, and at what cost. It will usually be the case that replacement cost (book price plus in-house preparation costs), when replacements of general collection books are available, is less than the bookbinders estimates for restoration.

Damaged books in the special collections and rare book rooms are another matter completely. They are seldom replaceable in their original editions, and microform copies would be a most unsatisfactory substitute. Restoration by professional book restorers should be the recommendation here. The bookbinders should be asked to provide cost estimates for each item. Those estimates should describe the damage (acid discoloration and embrittlement, paper staining and disintegration because of mold, mutilated pages, missing covers, etc.), how the damage would be corrected, and the probable cost. The priorities for treatment will have to be made by the librarian.

Because of the number of moderately to heavily damaged books in special collections almost always far exceeds the availability of funds to pay for their treatment, repair and restoration will nave to be programmed over a period of years. When that is the case, it is logical to recommend an in-house boxing program to protect the damaged items until it becomes their turn for treatment. The boxing can be done by staff, or students and volunteers working under the direction of a staff person. The box making techniques are simple, and instructions are widely available. The tools and equipment required are few and the costs for material are modest. The investment is worthwhile.

Worn and torn documents, except when there is damage to precious items, can usually be treated in house. For single minor tears, simple repairs, using good quality paper and starch or wheat paste, will suffice. For multiple tears, encapsulation between sheets of thin polyester film is the preferred solution. Encapsulation is easy to do, the tools required are a knife and scissors only, and the cost for materials is modest (see Cunha 9b). This should be recomended in most survey reports.

In many libraries and archives unbound documents are very often not in good quality, acid free folders and boxes. When that is the case, the report should recommend a high priority in-house program to refile the documents in acid free folders, and repackage the folders in archival quality storage boxes that have been labeled so as to lay flat on the shelves.

8.3 Acid damage

The pages in most of the books printed after the mid-19th century will be acid to some extent, sometimes to the point of embrittlement. Those printed on ground wood pulp paper will often be brittle even if they are now only a few years old. All acid contaminated books are doomed to self-destruct if the acid in them is not neutralized.

The treatment alternatives for acid contaminated books that could be recommended are (a) replacement with reprints on good paper,if they are available - which is unlikely, (b) copy on microfilm or microfiche - the currently favored method, (c) spray deacidification of individual items selected because of their particular importance to the institution - costly but a quite satisfactory solution, if the paper has not already become brittle, and (d) mass deacidification. Mass deacidification, is the ideal solution for all but the already embrittled books in libraries. Unfortunately mass deacidification will not be available in most countries in the foreseeable future. In the United States it is expected to become available from commercial sources, or from regional cooperative mass deacidification facilities, in a few years. See Cunha, G.M. Mass Deacidification for Libraries. Chicago:American Library Association, 1987 for more information on this important breakthrough in preservation.

Considering the resources now available, the survey report should include recommendations for the treatment of acid contaminated books along these lines:

a. a list of books, selected because of their extra importance to the library, for deacidification by a professional conservator as soon as possible.

b. a recommendation that the library obtain (if they are available) replacement copies or copies on microform of already brittle books.

c. or the library start its own microfilming program.

Acid contamination of unbound records is equally serious even though the paper on which they were created is sometimes of better quality - even very high quality. When acid contaminated single sheets are discovered, and the damage is discoloration only, they can often be spray deacidified in-house even if only modest treatment facilities are available. When the damage includes discoloration and embrittlement, they can be spray deacidified and encapsulated in-house. Encapsulation is a simple, easily learned, inexpensive method for enclosing brittle paper between sheets of thin, transparent, polyester film that can be done on any flat surface using only a knife and scissors for tools. Free instructions are available from the Library of Congress and many other sources.

8.4 Mould damage

If, during the survey, important books with heavy fungus damage (widespread staining and disintegration of the paper) are discovered they require high priority attention. The report should recommend, if replacement copies or copies on microfilm are not available, that the damaged books be sent at once to a bookbinder/restorer for disassembly, sterilization, stain reduction, page reinforcement, and rebinding as necessary.

It should also be recommended that heavily mould damaged documents be sent immediately to a conservation laboratory for sterilization, stain reduction, and paper reinforcement (or encapsulation) as necessary. Those treatments are beyond in-house capability unless there is a trained conservation technician on the staff.

8.5 Insect damage

The report should include a statement that all books and boxes of documents containing insects and/or traces of insects, or in which the paper has been damaged by insects, must be fumigated as soon as possible. That can be done easily with vacuum fumigation equipment that is frequently available in preservation workshops, sometimes in large libraries and archives, and often in industrial establishments such as food processing businesses. If the traces of insects are wide spread, the whole area should be repeatedly treated by commercial exterminators until there is assurance that the problem is under control.

8.6 Rodent damage

Because of the possibility of disease, evidence of rodents in the building should be a matter of major concern. The report should recommend that exterminators be hired at once to destroy the pests. Together with that, there should be recommendations for increased emphasis on housekeeping, and the strict observance of regulations in regard to the consumption of food and beverages by the staff and patrons. When leather book covers, and sometimes even the text blocks, have been chewed by rats or squirrels, restoration by professionals is required if the book, is important as an object. Otherwise it can be replaced, or microfilmed to preserve the intellectual content.

8.7 Water damage

Books and documents that have been wet in the past are usually stained. Slight staining can safely be ignored if there is no evidence of mould and the paper is dry. Heavy staining, that is offensive, and sometimes even obliterates the text, has to be removed by professional bookbinders or paper conservators. That should be recommended, unless the damaged item is one that can be replaced or microfilmed.

Often the covers and text blocks of books that have once been wet are twisted and distorted, making the book unusable. If the book is important, and it cannot be replaced, it can be restored to first class condition by bookbinding restorers. A recommendation to do so should include a statement that the price will be high, but the results will be most satisfactory.

8.8 Photochemical damage

Damage by natural and fluorescent light, and the ultraviolet radiation that is always associated with such lighting, to boxed records is improbable because that dangerous energy cannot reach the enclosed materials. Documents that have been displayed under, or otherwise exposed to, natural light or fluorescent artificial light for any length of time have undoubtedly been damaged often to the point where, in addition to the loss of strength, the paper has been discolored, and the ink faded. When the discoloration and/or fading has made the text difficult, or impossible, to read, professional conservators can often recover the printed or written information by infra-red or ultra-violet photography, or by chemical means.

The first evidence of light damage on shelved books is faded spines. That is a warning that should be the basis of a recommendation in the report to correct the dangerous lighting by blocking or screening the windows through which the sunlught is coming, and by putting ultra-violet filtering sleeves on any fluorescent tubes used for lighting the spaces in question. If that is not done the light will soon begin to destroy the cloth, paper, or leather material covering the back of the book first to the point where the title, author, shelving data, etc. is obscured and ultimately to the point where the spine will fall off thus exposing the book block itself to further damage.

9 Bibliography - References cited
- Additional literature

(1) (Anderson, Hazel). Report on a book condition survey June 1985-March 1986. Edinburgh:National Library of Scotland, 1987.

(2) Atkinson, Ross, "Selection for Preservation: A materialistic Approach", Library Resources and Technical services 30:343, October/December 1946.

(3) Bansa, Dr. Helmut. Selecting for Conservation-Selecting for Conversion: Some Practical Recommendations for Policy. Munich:Bavarian State Library (1985?).

(4) Buchanan, Sally. "Conservation Needs, Priorities, and Options at Stanford University" in Merrill-Oldham The Library Preservation Program.

(5) ..... and S. Coleman. "Deterioration Survey of the Stanford University Libraries Green Library Stack Collection", Preservation Planning Resources Notebook Washington, D.C.: Association of Research Libraries, Office of Management Studies, 1982.

(6) Child, Margaret. "Deciding What to Save", Abbey Newsletter: Bookbinding and Conservation 6(4) 2 Supplement 1982

(7) ..... "Further Thoughts on Selection for Preservation: A Materialistic Approach," Library Resources and Technical Services 30(4):354-362,1986.

(8) Clements, David W.G. Preservation of Library Collections Paris:Unesco 1985

(9a) Cunha, George M., Howard P. Lowell and Robert E. Schnare, Jr. Conservation Survey Manual. New York: New York Library Association, Section on the Management of Information Resources and Technology, 1982.

(9b) Cunha, G.M. and D.G. Conservation of Library Materials. Metuchen, New Jersey: The Scarecrow Press, Inc., 1971.

(9c) ..... Library and Archives Conservation; 1980s and Beyond. The Scarecrow Press, 1983.

(10) Fortson-Jones, Judith. "Practicality Peaks for this Conservation Survey Method", The New Library Scene 1(2):1-8,1982.

(11) Hazen, Dan C. "Collections Development, Collections Management, and Preservation", Library Resources and Technical Services 26:10, January/March 1982.

(12) Hendricks, Klaus B. The Preservation and restoration of photographic materials in archives and libraries: A RAMP study with guidelines. Paris:Unesco, 1984.

(13) Kathpalia, Y.P. A Model Curriculum for the Training of Specialists in Document Preservation and Restoration: A RAMP Study with Guidelines. Paris:Unesco 1984.

(14) McCrady, Ellen. "Selection for Preservation: A Survey of Approaches", The Abbey Newsletter: Bookbinding and Conservation 6(4):Supplement,1982.

(15) Merrill-Oldham, Jan and Merrily Smith (eds). The Library Preservation Program. Chicago:The American Library Association, 1985. This is the proceedings of the April 1983 conference "Library Preservation: The Administrative Challenge" at the Library of Congress for top level library managers.

(16) Milevski, Robert and Linda Nainis. "Implementing a Book Repair and Treatment Program", Library Resources & Technical Services 31(2):151-175. Chicago:American Library Association, 1987.

(17) ..... Book Repair Manual. Carbondale, Illinois: Illinois Cooperative Conservation Program, Southern Illinois University, 1984.

(18) Morrow, Carolyn Clark. Conservation Treatment Procedures: A Manual of Step-by-Step Procedures for the Maintenance and Repair of Library Materials. Littleton, Colorado: Libraries Unlimited, 1982.

(19) Nainis, Linda and Laura A. Bedard. "Preservation Book Survey in an Academic Law Library", Law Library Journal 78:243-259, Spring 1986.

(20) Ogden, Barclay W. "Determining Conservation Options at the University of California at Berkeley", in Merrill-Oldham The Library Preservation Program.

21) Planning for Preservation of Library Materials SPEC Kit 66. Washingon, D.C.: Association of Research Libraries, Office of Management Studies, Systems, and Procedures, 1980.

(22) Ratcliffe, F.W. and D. Patterson. Preservation and Conservation in British Libraries: Report of the Cambridge University Library Conservation Project. London:The British Library, 1984.

(23) Ritzenthaler, Mary Lynn. Implementing a Conservation Program. Chicago:Society of American Archivists, 1982.

(24) Rogers, Rutherford D. "Library preservation: Its Scope, History, and Importance", in Merrill-Oldham The Library Preservation Program.

(25) Schnare, Robert E. "How to Handle Your Deteriorating book Collections From an Administrative Point of View", The Library Scene 8(3):12-13,1979.

(26) Smith, Dr. Richard D. "Deacidifying Library Collections: Myths and Realities," Restaurator 14931/39 November 1987.

(27) Streit, Samuel A. (et al). "Guidelines on the selection of general collection materials for transfer to special collections", College & Research Library News September 1987 (pages 471-474).

(28) "Survey of Book Conditions at the Library of Congress", in the Library of Congress's National Preservation News 1:8-9, July, 1985. An unpublished Library of Congress discussion paper "Preservation Selection Decisions". Prepared by Rickey Erway, Office of Planning and Developemnt, Library of Congress, September 1987.

(29) Walker, Gay (et al). "The Yale Survey: A large Scale Study of Book Deterioration in the Yale Library", College & Research Libraries 46:111-132, March 1985.

(30) Welsh, William J. "The Preservation Challenge", in Merrill-Oldham The Library Preservation Program.

(31) Winkle, Becky. "Preservation on a Shoestring: Low and No-Budget Operations to Get a Preservation Program Off the Ground", American Libraries 16:778-79, December 1985.

10 Annex

Useful Forms for Recording Conservation Survey Data

The six forms reproduced on the last eight pages of this annex were developed over a period of many years and are the result of much experience in the field. They were first used at the Library of the Boston Athenaeum in the early 1970s and were later expanded into what is essentially their present form by conservators at the North East Document Conservation Center. They are also being used with much success by graduate and continuing education students in their field work while studying library and archives conservation management at the University of Kentucky's College of Library and Information Science, and at Wayne State University.

These survey forms provide an orderly method for recording for later use the large amount of information that has to be collected in the course of a conservation survey to determine the preservation needs of libraries and archives. Using these forms as guides is by no means the only way to tabulate the mass of information accumulated while doing a conservation survey of a building and the environment, the conditions inside the building, and the state of repair (or disrepair) of the multitude of books, and documents, maps, prints, broadsides, microforms, photographic materials, moving picture and television film, and audio and video tapes and disks that have been placed there for safekeeping. This system has been working satisfactorily for many years, but other systems undoubtedly work just as well.

Suggestions for things to look for in the process of gathering the data to enter on the forms are included in Sections 4 and 5 of this RAMP study's text.

Form A, one page, is for help in collecting general information applying to a building as a whole.

Form B1, also one page, is for recording data pertinent to a single room (or space) in the building. When a survey has been completed there should be a completed B1 form for each stack area, exhibition and reading room, staff room, the administrative area, the furnace room and any machinery rooms, attic and basement storage areas, and the janitor's spaces. Depending on the size and type of library or archive being evaluated, some of the B1 forms will be crammed with data. Others will be only sparsely notated.

Form B2, which requires three pages, is primarily for recording more detailed information, than is on the B1 forms, in regard to storage and exhibition rooms where the books and records are stacked or displayed. It is also useful for more detailed appraisal of other spaces that have potential for later use as storage and exhibition rooms.

Form C1, a single page, is intended for assembling data in regard to the various categories of materials or for different collections of the books and documents.

Form C2, one page, is for recording the condition of single books or other items of particular importance. The detailed information on this form is also helpful in the establishment of lists of priorities for preservation treatments.

Form C3 was devised for use in lieu of or in addition to the C1 forms in large establishments, where there are a wide variety of materials and many named collections, in order to reduce the number of C1 forms required to complete the survey.

Survey Form A
The Building

Place
Date of survey By whom

The location and climate

The building

Type of construction and age

Exterior condition

The roof

Interior climate control

Heating

Cooling

Humidity control

Security

Type and location of intruder alarms

Monitored by

Type and location of fire detectors
Location

Automatic Extinguisher

Portable extinguishers

General comments

Staff experience and conservation facilities

Survey Form B1

Conditions in the Interior Spaces

Place

Date of survey By whom

Room Location in building

Length ft. Width ft. Height ft. Temp. ^{0}C Rel.Hum. %

Housekeeping

Room contains

Stored in

Illumination

natural

artificial

u.v. control

Heating and Cooling Arrangement

Humidity Control

Security

Fire Hazards

electrical

heating

other

Water Hazards

plumbing steam or water heating pipes

building leaks other

Evidence of

Insects Rodents Fungi

Temperature extremes Humidity extremes

Damage by light Other damage

Survey Form B2

Additional data for storage and exhibition rooms.

Place The room

The room contains

How stored

General

location in the building Dimensions

windows (number, where, what type, their condition)

materials requiring special storage (microforms, etc.)

Climate control

air pollution level

temperature range (two weeks winter, two weeks summer

relative humidity range

Heating

Hot water, steam, hot air, electric

Air conditioning

Air filtration

Lighting

direct sunlight and hours of exposure

artificial lighting

incandescent

fluorescent

fluorescent with ultraviolet filters

Survey Form B2 (page 2)

Flood Control

Position of potentially damaging water or steam pipes.

Position of not watertight windows.

Location of drains.

Amount (cubic feet) of the storage space below ground level.

Fire protection.

Location of extra valuable materials in this room.

Heat sensors: number and location.

Smoke sensors:

Automatic extinguisher heads: number and location.

Portable extinguishers: frequency of inspection?

Liaison and agreement with fire department?

Security

Is the room open to the public?

Perimeter alarms-what kind and where:

Motion detectors:

Other precautions:

Biological attacks

Evidence of insect activity, rodents, mould or mildew?

Survey Form B2 (page 3)

Shelving

What kind and how arranged?

Is there enough of it?
Are materials shelved properly?
Sufficient space between shelves?
Books upright standing on end?
Books not tightly packed?
Oversize books laying flat.
Document boxes laying flat?

Housekeeping

Are the room and the materials in it clean?

Housekeeping methods?

Exhibition facilities

Number, kind and placement of cases.

Type of lighting.
Ultraviolet filtration?

Temperatures in the cases?
Relative humidity "

Method of supporting exhibited books?

How are they kept open?

How long are materials on display?

Survey Form C1

The Condition of Collections

Place Date By whom.

Name of Collection

Type of material.

Stored in room on the floor

How stored?

Condition of the Collection

(a) Appearance?

Wear and tear?

Soil and surface dirt?

Staining?

(b) Acid damage? Extent? Paper pH?

Discoloration? Embrittlement?

(c) Fungus damage? Extent

Mildew spores Mould stains Paper pulping

(d) Insect damage? Extent

(e) Damage by rodents?

(f) Water damage? Extent? Recent?

(g) Damage by light? Source?

General Comments

Survey Form C2

Single Book and Document Condition Report

Place Date By whom?

Book or document Stored in Room

	Treatment needed
1. Item no longer usable	
a. Paper disintegrates if handled	Replace or
b. Paper contains lignin	Reproduce
c. Item needs major/minor repair	
d. Item is mutilated	
2. Item usable for limited period if carefully handled	
a. Paper bad but still intact	Replace or
b. Paper moderately good but not permanent	Reproduce or
c. Paper contains lignin	Minor repair
d. Paper in need of major/minor repair	only
e. Binding needs major/minor repair	
f. Poor quality binding	
g. Item is mutilated	
3. Item is now in good condition but not of permanent quality	
a. Good quality paper	Repair or
b. Fair quality paper	Replace in
c. Paper contains lignin	future
d. Binding needs major/minor repair	
e. Poor quality binding	
f. Item is mutilated	
4. Item is usable for indefinite period if repaired	
a. Excellent paper	Repair
b. Sturdy binding	
c. Binding needs major/minor repair	
d. Poor quality binding but will hold	
5. Item usable for a long time, excellent paper, good binding	
a. Mutilated	Repair mutilation
6. Poor quality or improper storage container	Replace